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### VACCINE IN TYPHOID.

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In reply to a letter from our secretary I wrote Dr. Jones that I would prepare and read an article on the use of vaccines. I had in mind going over my records and touching the high points in their use in typhoid, gonorrhœa, whooping-cough, respiratory infections, etc. On looking over my case records and finding that my results with typhoid vaccine differed from the generally-accepted view of little or no effect on temperature, I decided to give only my results with typhoid vaccine. By far my best results have been in tuberculosis, where they have always been uniformly good, more than that, splendid. I am treating at the present time a case of tuberculosis of the larynx. This case came to me from Oakland last March. When she first came you could not hear her speak across my office. Swallowing was very painful. To-day, after three and one-half months' treatment with tuberculin, she is only slightly hoarse, can even sing, absolutely no pain on swallowing, and she has gained some in weight.

In 1908 an article of mine appeared in the New York Medical Journal noting the results I had obtained with diphtheria antitoxin in bronchial asthma. The conclusions I drew were not in entire accord with the conclusions of others at that time, but I believe they are regarded as correct now. While the conclusions I draw in regard to typhoid vaccine may not be correct they may prove of value in some way.

The value of prophylactic typhoid vaccine is beyond question and will not be discussed in this paper. This applies only to the therapeutic use. In Watters' analysis of more than a thousand cases treated with vaccine, they agree in the following results: Patients show less depression, a lower temperature curve, fewer complications, and were brighter throughout the course of the disease.

Their least important effects seemed to be on the temperature curve. While less depression and a brightening-up of the patients were the two points most marked in my cases I did also observe a decided effect on the temperature in the cases where any effect at all was noticeable.

We have been assured over and over again that we can expect no results from therapeutic vaccine because, they say, the symptoms of typhoid are caused by a poisonous split protein from disintegration. Therefore, if we give the protein vaccine we are simply increasing the poison and aggravating the disease so we are not justified in making clinical trial of the therapeutic vaccine. That is theory and test-tube science which does

not always apply to the human body, though some of our so-called authorities would like to have us believe it does. Pure physical science works wonderfully in diagnosis, but when it comes to treatment the human body often refuses to become a test tube.

One of the greatest compliments I ever heard given the country-town doctor was given several years ago in New York city. A leader of the medical profession in that city said: "If I were taken very ill I would want Dr. Osler of Baltimore to diagnose my case but I would want a certain doctor up here in a country town whom I know to treat me. In fact I know a large number of country-town doctors, any one of whom I would choose to treat me in preference to our 'large-town theorists.'" It is true that this was said in 1902 when drug nihilism was at its height, but it is true to-day in that bedside results are superior to test-tube results, though bedside results are more difficult to obtain and both are essential to best results.

I have used typhoid vaccine in fifteen cases but I am only going to report to you six cases, as they all fall into two divisions and are simply repetitions, cases in which the vaccines gave results and cases in which no effects could be noticed.

Case No. 1. G. R., a boy aged three years. Had been ill two weeks before I was called. He was delirious at first visit. Pulse 150. Temperature 105. Widal was positive. As the patient lived fifteen miles from my office and I had no typhoid vaccine on hand it was two days after I first saw case until I was able to get Widal and the vaccine. During this time temperature continued between 104½ and 105½. Pulse from 150 to 160. Forty-eight hours after first visit I gave this three-year-old boy ½ c.c. typhoid vaccine containing 250,000,000 bacteria. Twenty-four hours later delirium had ceased. Pulse 130; temperature 103½. Forty-eight hours after dose, no delirium, temperature 101, pulse 120. Boy seemed greatly improved and much brighter. The next day he was about the same. The next day he was delirious again and continued so with a pulse around 150 and temperature around 105 for ten days. He received three additional doses of vaccine. He recovered in the usual way of a severe typhoid, the first dose of vaccine apparently giving remarkably satisfactory results with no results whatever from the following doses.

Case No. 2. Sister of above boy, two years old. Began showing signs of typhoid when I first saw case No. 1. She was not very ill but Widal was positive. Temperature 102, pulse 120. I gave her one-half c.c. or 250,000,000 bacteria. Within forty-eight hours temperature and pulse were normal and remained so. The remainder of this family, consisting of an older sister, a two-months-old baby brother, a father and mother, all were given prophylactic vaccine. None contracted the disease.

Case No. 3. R. P., boy aged two and one-half years. He had been ill about one week when I first saw him. Temperature 102, pulse 130. Widal negative. I made a clinical diagnosis of typhoid and instituted typhoid treatment. He gradually grew worse. Widal was made every day. On the twelfth day of the disease it was positive. I now gave one-half c.c. vaccine, pulse being 130, temp. 104. The next day pulse the same, temp. slightly higher. The next day, about the same; I gave a second one-half c.c. vaccine. The next morning temperature fell but rose to 104 during the day. The next day temperature was 101 and the next

day normal, and continued from normal to 100 for three days, then it rose to 102 and I gave another one-half c.c. vaccine. The next day it rose to 103 and the next day fell to 97½ and continued about normal and ended the course of the disease.

Case No. 4. Geo. Witt Sims, aged 5 years. He had been ill ten days when first seen. Temperature 104, pulse 126. Widal negative. Clinical diagnosis typhoid and treatment for same instituted. Two days later, or the 13th day of the disease, Widal positive with temperature 105½, pulse 130. Gave one-half c.c. or two hundred fifty million bacteria. The next day temperature and pulse were practically the same. The second day following vaccine temperature 102, pulse 130. The third day temperature 101½, pulse 110. General condition of patient greatly improved. Temperature continued from 100 to 101 for two days, then began to rise, reaching 103. I gave one-half c.c. vaccine and temperature was 103 the next day. I gave another one-half c.c. vaccine. The next day it dropped to 99½ and never went above 100½ after that, the disease continuing for twenty-four days from the start or eleven after the first dose of vaccine. From the second day following the first dose of vaccine patient was remarkably bright and in splendid general condition.

Case No. 5. F. Ray, girl, aged 4 years. Had been ill ten days when first seen. Temperature 104, pulse 130. Did not make positive clinical diagnosis as it was an atypical case. On the eleventh day Widal was positive. One-half c.c. vaccine given. The next day temperature was 100 and the next day normal, and she had no more fever, temperature above normal and seemed well from then on, or from the third day following the vaccine. This was probably what has been termed an abortive typhoid. We have all known physicians who claimed to have aborted typhoid with calomel or some other simple remedy that most patients get, but which do not stop the disease, and we of course believe this to be a false impression. I am not prepared to say that I think the vaccine cut the course of this case so short. It was probably a case where only a few glands were infected or possibly the intestinal glands were not infected at all but some other organ of the body was the part suffering, though I was unable to prove that to be the case. I assume it was.

Case No. 6. G. M., boy aged 4 years. I saw this case first on the ninth day of the disease. Temperature 103, pulse 120. Widal was negative until the eleventh day, when it was positive with temperature of 105 and pulse of 130. I gave one-half c.c. vaccine on the 12th day of the disease and repeated the dose on the 14th, 16th, and 19th and 22nd days of the disease with absolutely no effect that could be detected. Temperature and pulse ran typical of the severe enteric. Toxemic symptoms severe throughout the disease. Temperature becoming normal on the 27th day of the disease. I have treated two other cases which would be a practical repetition of the above. The cases were treated in 1911 and it is possible that the vaccine was not equal to what it is to-day, or what to my mind is more likely the infection was in each of those cases complicated with the paratyphoid A and B.

One thing noticeable about these cases which I selected to report is the high temperatures early in the course of the disease. I used great care in trying to determine the onset of the disease and believe the days of the disease are correct as given.

I regret that in the above series of cases I am unable to give blood pressure before and after the use of vaccine. I am satisfied, however, that in those cases where a lowering of the temperature

was noted there was an improvement in blood pressure, because the most notable improvements were in a brightening of the patient and lessening of all toxic symptoms. I noticed particularly that I began to get results in about thirty-six hours after the injection of the vaccine and that results were marked within forty-eight hours. Unfortunately all the cases in which I have used the vaccine and kept close records have been children. I am unable to report cases of adults. It should also be remembered that no matter how positive the clinical diagnosis I never gave the vaccine until the Widal was positive.

We may sum up as follows:

1. Cases all children.
2. Vaccine never given until Widal was positive.
3. Dose in each case 250,000,000.
4. Effects plainly noticeable in forty-eight hours.
5. No bad effects.
6. Temperature and pulse lowered.
7. Less depression, patient markedly brighter, no hæmorrhage or other complications in any of the cases in which I have used it.
8. Shortening of course of disease possible though I am inclined to believe it only lessens its severity.

The time should soon come when typhoid vaccination shall be compulsory in all schools and places where numbers of people are employed. Then will be the end of typhoid fever.

I cannot close this paper without saying something about diet in typhoid, because in the Medical Clinics of Chicago for November, 1915, which probably many of you read, appeared an article by Dr. Williamson of Chicago. I believe it to be a dangerous article to inexperienced physicians. Here is what he says to feed your typhoid patients during the course of the fever:

Milk, if they like it; eggs, raw, beaten in milk, soft boiled, poached, coddled or omelet; ice cream; cream of wheat; oatmeal or any soft cereal with plenty of cream; soups, not thin "slops" but thick, heavy vegetable soups, as, cream of pea, potato puree, mashed creamed potato; wine jelly, tapioca with fruits; green asparagus tips; cauliflower tips; and he sees no objection to giving sweetbreads and calf's brains.

If he uses that diet there is one thing this man is going to get. That is hæmorrhages. He cannot escape them. He says he has been called out several times to cases of hæmorrhage. We would know that if he had not mentioned it, but he regards it a greater disgrace to have his patients lose twenty-five pounds weight. I have not the slightest fear when I see my typhoid patient lose a little flesh if other conditions are satisfactory, but I have a great horror of hæmorrhage. I have been in two epidemics of typhoid and have treated seventy cases. I have been fortunate enough to have hæmorrhage in only one case and that was the case of a man to whom I was called first on

the twenty-first day of the disease, he having been under the care of another physician allowing liberal diet. The other physician was discharged and I was called to the case at one o'clock p. m. I told his wife that he was then bleeding to death. I gave a hypodermic of ergot and morphine and returned to my office for my saline apparatus. When I returned in about one-half hour the bed was full of blood and the mattress was soaked so it ran through on the floor. He died in about three minutes after I reached the house the second time.

I think it was during the years 1901 and 1902 that Dr. H. L. Elsner, physician-in-chief of St. Joseph's Hospital at Syracuse, New York, put every second case of typhoid coming into the hospital on straight milk diet. He put every second one on milk, custard, and strained tapioca. Hæmorrhages were about four to one in those having the more liberal diet. Mortality was also higher but I do not know figures. I believe liberal diet very dangerous except possibly in the hands of the most skillful, and then it is certainly not of enough extra value to equal the extra danger it entails. They tell us there is excessive nitrogen excretion in typhoid so we must feed proteids and immediately say vaccine is of no value because it adds proteids.

My patients get only milk, one tablespoonful of ice cream twice a day and one tablespoonful of gelatine twice a day. I have given liquid peptonoids but failed to see any value from their use and thought my patients showed greater toxemic effects during their use.

Since reporting the above cases I have been treating another case that is interesting in that I did not use typhoid vaccine but Mulford's mixed staphylo-strepto serobacterin.

This patient, a girl aged fourteen years, was first seen on the tenth or possibly twelfth day of the disease. Her temperature was 105 and her pulse 130. I gave one-half c.c. staphylo-strepto serobacterin. The next day temperature was 103½, pulse 130. I gave a second one-half c.c. staphylo-strepto serobacterin. The next day temperature was 101, pulse 126, and all toxic symptoms markedly less. The temperature continued between 100 and 101 for three days when I gave another one-half c.c. of the serobacterin. The next day temperature rose to 102, fell the next day to 100, rose the next day to 102, fell the next day to 100 1-5, the next day to 99 4-5, the next day to normal and never rose above 99 after that. Her pulse and general condition improved with or rather a little ahead of her temperature. This patient was kept strictly on the diet of milk, ice cream, and gelatine, and on August 20th, or thirty days after I first saw her, she had lost only seven pounds in weight. She had no headache after the first dose of serobacterin.

My reason for using serobacterin in this case was that when I first saw her I knew I was dealing with an infection, but it was not at all clear that it was typhoid. By the time I received report on Widal the effect had proven so valuable I continued it.

## THE GENERAL PRACTITIONER AND THE TUBERCULOUS PATIENT.\*

By ROBERT A. PEERS, M. D., Colfax.

Mr. President and members of the Fresno County Medical Society. Your secretary, in his letter of invitation, requested me to speak to you upon either early diagnosis or the necessity of persistency in treatment when caring for the tuberculous. I thought it would perhaps be better to deal not only with these but also with various other of the problems confronting the general practitioner in the treatment of tuberculosis. Because pulmonary tuberculosis is the form of tuberculosis most frequently met, my remarks will deal exclusively with this type of disease.

The patient with tuberculosis who comes to the specialist for confirmation of diagnosis or for treatment, nearly always comes referred by the general practitioner. He does not apply to the specialist first. If the general practitioner sees the patient early and is keen and capable, the patient's chances for improvement are much enhanced and his stay at the institution shortened materially. If the patient seeks advice late, or if, from faulty diagnosis the nature of his disease is overlooked, the reverse is true. These remarks hold good for the larger number of tuberculous who will not, or cannot, secure the advantage of institutional care. Thus the great burden of correct diagnosis and the care of the tuberculous falls upon the general practitioner and not upon the specialist. Because of this, it is imperative that we should, from time to time, review our knowledge of tuberculosis and endeavor to increase to the utmost our powers of diagnosis and improve our methods of treatment.

The lot of the general practitioner is not an easy one and in his endeavors to secure an early diagnosis and to institute treatment as soon as possible he encounters difficulties other than those which are purely scientific. He is a busy man with but little spare time at his disposal and in the making of an early diagnosis plenty of time is one of the great essentials. Again, he is poorly paid for his time. Only too often there is a "flat rate" fee for office consultations and visits and the patient or his family not infrequently object to paying a sufficient remuneration for the extra time which must be taken. They have come for a tonic or a cough medicine for a patient who is, apparently, merely run down and not only often fail to appreciate the painstaking efforts of the conscientious physician to discover the cause of the "run down" condition or of the cough, but even endeavor to discourage the thought that these symptoms can really be the danger signals of a serious constitutional disorder. Even with the diagnosis of tuberculosis made and the plan of treatment outlined, the physician has difficulty in overcoming the skeptical attitude of his client or the client's family.

But the physician's troubles do not end with the patient and his family. Only too often, it may be

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